

## SHINGLE REMOVER

### Field of the Invention

[0001] The field of the invention is hand tools, and in particular hand tools for removing shingles.

### Background of the Invention

[0002] Shingles are typically fixed to a vertical or sloping substrate such as a wall or a roof in order to protect the substrate from the elements. The shingles are interleaved such that each shingle is partially covered by at least one other shingle. This helps to protect the shingles themselves, especially the parts where the shingles are pierced to fasten them to the substrate. Shingles are typically fastened to the substrate using nails.

[0003] It is known to remove a shingle by removing the nails that fasten the shingle to the substrate. The nails can be sheared off using a blade slipped under the shingle, or pried out. Both methods require disturbing the shingle, and often surrounding shingles, to get to the nails. Tools that implement this technique can disadvantageously disturb and damage shingles that surround the one to be removed.

### Summary of the Invention

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[0004] In accordance with an embodiment of the invention, a Vise-Grip® is equipped with a plate fixed to its upper jaw, another plate fixed to its lower jaw, and an anvil fixed to one of its handles. The Vise-Grip® is a pair of locking pliers made by the American Tools Companies, Inc. of Vernon Hills, Illinois. A user clamps the plates onto the bottom edge of a shingle that is to be removed, and then strikes the anvil with sufficient force to pull the shingle from the substrate. This advantageously removes the shingle without disturbing the surrounding

shingles. The nails can pull out with the shingle; be sheared off; or be left behind and either be pounded in or later sheared off.

#### Brief Description of the Drawings

[0005] Figure 1 shows an apparatus in accordance with an embodiment of the present invention.

[0006] Figure 2 shows an apparatus in accordance with another embodiment of the present invention.

[0007] Figure 3 shows ~~plates that are~~ pivotally connected to the upper ~~and lower~~ jaws in accordance with an embodiment of the apparatus.

[0008] Figure 4 is a flow chart that shows the method in accordance with an embodiment of the present invention.

## Detailed Description

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[0009] An embodiment of the present invention is shown in Figure 1. This embodiment generally comprises ~~locking pliers~~ <sup>labeled</sup> 10 having plates 11 and 12 fixed to the upper jaw 13 and the lower jaw 14, respectively, as well as an anvil 15 adapted to receive a blow from a hammer (not shown.) The invention is best implemented using locking pliers 10, although non-locking pliers can also be used. Locking pliers 10 include an upper handle 16 that is pivotally coupled to jaw member 17 at pin 18, and a lower handle 19 that is pivotally coupled to a jaw member 17 at pin 20. As used herein, the term "coupled" means directly or indirectly connected. Thus, if A is coupled to B, and B is coupled to C, then A is coupled to C. Upper handle 16 and lower handle 19 terminate at their distal ends with opposable upper jaw 13 and lower jaw 14, respectively. Anvil 15 is fixed to jaw member 17 and is oriented at about a 90 degree angle in relation to lower plate 12. Upper handle 16 is pivotally coupled to linking member 21 at pin 22, and lower handle 19 is pivotally coupled to linking member 21 at pin 23. At its proximal end, upper handle 16 is internally threaded and is adapted to receive adjustment screw 24. Distal to the threaded portion, the upper handle forms a cylinder having a slot along its length. The slot is adapted to receive the upper end of link member 21, which freely slides along the slot, and which abuts the distal end of adjustment screw 24. Further towards upper jaw 13 and around pin 18, upper handle 16 is generally U-shaped to receive the upper portion of jaw member 17. Proximal end of spring 25 is fastened to upper handle 16, while distal end of spring is coupled to jaw member 17, thereby providing a bias to keep jaws 13 and 14 open. Release lever 26 is pivotally coupled to lower handle 19 at pin 27.

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[0010] In operation, adjusting screw 24 moves the upper end of the linking member proximally or distally. This affects the force required to bring upper handle 16 and lower handle 19 together into a locked position, thereby making the locking pliers adjustable. Once locked, the pliers 10 can be unlocked (released) by moving the distal end of release lever 26 towards lower handle 19, thereby levering up the portion of linking member 21 that abuts lower handle 19 when the pliers 10 are locked.

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*a a a a*

[0011] In accordance with an embodiment of the present invention, opposing upper plate 11 and lower plate 12 are fastened to the bottom of a shingle by bringing upper handle 16 and lower handle 19 of pliers ~~10~~ together. Adjustment screw should be set such that the upper and lower plates 11 and 12 grip the shingle with sufficient force when the pliers ~~10~~ are in the locked position. Plates ~~10~~ and ~~11~~ grip the shingle with sufficient force when the shingle is removed when anvil 15 receives a blow from a hammer. Plates ~~10~~ and ~~11~~ grip with insufficient force when the tool comes off the shingle when it receives a blow from the hammer, without removing the shingle.

[0012] Upper plate 11 and lower plate 12 can be of any shape, size and thicknesses, provided they can grip the shingle with sufficient force. Upper plate 11 can be a different shape, size and thickness than lower plate 12. Upper plate 11 and lower plate 12 can be planes that are substantially parallel to each other in the locked position, or any shape adapted to grip the shingle with sufficient force. The surface of a plate can be textured to enhance its gripping power. For example, the surface of a plate can be roughed, such as by providing surface of the plate with ridges. The ridges should be perpendicular to the downward force applied to the shingle. Alternatively, the surface of a plate can have teeth positioned randomly, or according to a pattern.

[0013] Anvil 15 can be positioned on the lower handle 19, as shown in Figure 1, or on the upper handle 16. Anvil 15 should be positioned so as to least interfere with the placement of pliers ~~10~~ on the shingle, and where it is easiest to strike when pliers ~~10~~ are locked onto the shingle. Anvil 15 can be of any shape, size and orientation such that it can receive the blow of a hammer or other tool adapted to transmit force so as to remove the shingle.

[0014] An embodiment of the present invention is used by gripping the bottom of the shingle to be removed with upper plate 11 on one side of the shingle, and lower plate 12 on the other side of the shingle. Once the opposing plates 11 and 12 are gripping the shingle, a sudden force is applied to the pliers, for example, by hitting anvil 15 with a hammer. The nails in the shingle are then pulled out, shear off, or the shingle itself rips off of the nails. In this way, the shingle is

removed. If a nail remains in the substrate, it can be sheared off by slipping a flat blade along the substrate and shearing the nail off by imparting a sudden force to the end of the blade, e.g., by striking a blow with a hammer on the lower end of the blade. Alternatively, the nail can be pushed further into the substrate, e.g., by pushing it in by sliding a blade over the top of the nail, and then pushing or hammering the blade towards the substrate, thereby pushing in the nail.

[0015] Another embodiment of the present invention is shown in Figure 2. Anvil <sup>15'</sup> is coupled to lower jaw 14 with an elongated rod 21. Elongated rod can be fixed to lower jaw 14 by a weld, by screws (not shown), etc. Elongated rod may be straight, curved, or otherwise bent. Sliding hammer 22 is mounted on elongated rod 21, such that sliding hammer 22 may slide up and down elongated rod 21. In particular, sliding hammer 22 may be slid down elongated rod 21 away from said upper jaw 13 and lower jaw 14, to strike anvil <sup>15'</sup>, thereby exerting force on the apparatus to pull a shingle that is gripped between upper plate 11 and lower plate 12, thereby removing it from the roof. Anvil <sup>15'</sup> should be an enlargement of the elongated rod 21, or otherwise wider than elongated rod 21, so as to provide a striking surface or area of increased friction for sliding hammer 22.

[0016] Typically, lower jaw 14 is disposed adjacent to the surface of the roof when removing a shingle in accordance with the present invention. Elongated rod 21 should not be configured so as to lie close enough to the roof such that the sliding hammer 22 contacts the roof, and cannot freely move along elongated rod 21 to strike anvil <sup>15'</sup>. In figure 2, the elongated rod 21 is bent so as to provide sufficient clearance for sliding hammer 22 to travel along a portion of the elongated rod 21 to freely strike anvil <sup>15'</sup>.

[0017] Likewise, the anvil <sup>15'</sup> can be coupled to the upper jaw 13, or any other part of the shingle remover by an elongated rod (not shown), provided the sliding hammer 22 can freely travel along at least a part of the elongated rod 21 to strike anvil <sup>15'</sup>. Further, the positioning of elongated rod 21, sliding hammer 22 and anvil <sup>15'</sup> should not render the apparatus too cumbersome for removing shingles.

[0018] The embodiment shown in Figure 2 advantageously does not require the use of a separate hammer that is susceptible of being dropped from the roof.

[0019] As shown in Figure 3, upper plate ~~11~~<sup>12</sup> and/or lower plate ~~12~~<sup>11</sup> can be pivotally coupled to upper handle 16 and lower handle 19, respectively. Mounting bracket 31 is fixed to upper plate ~~11~~<sup>12</sup>. Pin 32 passes through mounting bracket 31 and into (or through) upper handle 13. Upper plate ~~11~~<sup>12</sup> is thereby coupled to upper handle 13, and upper plate ~~11~~<sup>12</sup> pivots around pin 32. This advantageously permits upper plate ~~11~~<sup>12</sup> to be positioned lie substantially flat on a shingle, increasing the surface area (and thereby the friction) with which it grips the shingle.

[0020] Figure 4 is a flow chart showing a method in accordance with an embodiment of the present invention. An shingle is gripped between the upper plate and a lower plate of the apparatus in accordance with an embodiment of the present invention 401. A sudden force is applied to an anvil coupled to the plates 402. The shingle pulls free from the substrate 403.

[0021] The above description of embodiments of the present invention are merely exemplary. Other embodiments within the scope of the present invention will be apparent to one skilled in the art.